

## COMBINED TONGUE DEPRESSOR AND ORAL SPRAY DEVICE

### CROSS-REFERENCE TO RELATED APPLICATION

This invention claims priority from Provisional Patent Application 60/406,466, filed in the name of the inventor Dr. Harold Katz on August 28, 2002.

### BACKGROUND OF THE INVENTION

#### FIELD OF THE INVENTION

This invention is concerned with a combined tongue depressor and oral spray mechanism which is used to dispense or spray a solution or fluid, such as a liquid, a gel, a gel paste or any other material so that the rear portion of the throat area, and the rear portion of the tongue, tonsil area or pharynx can be reached by the material being sprayed.

#### DESCRIPTION OF PRIOR ART

Conventional oral spray devices use a spray head which just about enters the forward or opening mouth portion, and the spray or material dispensed does not reach the throat portion, tonsil area or the dorsal or rear portion of the tongue or the pharynx area. Specifically, the spray may also be blocked by the tongue raising its position in the mouth cavity. Moreover, when a conventional spray head is used, the spray portion or item dispensed spreads and contacts the posterior portion of the tongue and does not reach the rear of the mouth and the effectiveness of the oral spray, i.e. item dispensed is dissipated. It has also been found that when a conventional spray head or dispenser is used the user's tongue also tends to prevent the spray or dispensed item from reaching the pharynx,

tonsil area, throat or rear portion of the mouth where the tonsils are located, and as well as the dorsal portion of the tongue.

To use a conventional tongue depressor, together with a dispensing mechanism or spray device, both individually would be cumbersome for a user.

It has also been found that heretofore conventional spray devices may be difficult to manipulate because the orientation of the spray nozzle may be difficult to adjust based on the connection between the spray nozzle and the material container.

### BRIEF SUMMARY OF THE INVENTION

In order to avoid the deleterious effects of conventional spray devices, I have developed a combined tongue depressor and oral spray device or dispensing device which can be used by individuals having the requirement for different angular usages. In one of the preferred embodiments, the device can be used by individuals having a different sized mouth cavity.

The purpose of the combined tongue depressor and oral spray is to provide for a head portion or discharge nozzle at the distal end of the mechanism so as to have or enable the oral spray which includes any product or material that is dispersed or can be dispersed through a nozzle opening to reach the intended area without having the tongue prevent the spray or dispensed product from reaching the throat portion, while the proximal end of the mechanism is close to a container containing the fluid or item to be dispensed.

The oral spray which is intended to be dispersed by the inventive combined tongue depressor and oral spray dispenser because the material to be dispensed is intended primarily to reach a particular area of a person's mouth and oral cavity. To be most effective, it is intended that the material reach the rear of the mouth cavity as explained. The oral spray to be dispensed or item to be dispensed is to be distinguished from other oral sprays and dispensed items wherein location or intended areas may not be as sensitive as the intended area for the dispersion of the oral spray to be dispersed with the combined tongue depressor and oral spray dispenser.

For the utility of the material dispensed, the rear of the mouth cavity is the most important area to be reached and the tongue has a tendency to block the opening to the rear portion of the mouth cavity.

The combined tongue depressor and oral spray mechanism includes a distal end portion which provides a mechanism having one or more orifices to dispense the fluid and is connected with a central portion having an inner passageway through which the material or fluid can pass from its entry portion at the proximal end of the central portion to the exit portion at the distal end. A movable connection is provided for connecting the proximal end of the central portion to a fluid container having a fluid dispensing mechanism.

In accordance with the teachings of this invention, the combined tongue depressor and oral spray mechanism can be adjusted for any individual mouth cavity and for any different angular control.

The combined tongue depressor and oral spray mechanism may have a cylindraceous or a quadrangular outer configuration with a round portion outer configuration, an oval outer configuration or at least one flat portion outer configuration adapted to engage or rest on top of the tongue portion or any other outer configuration suitable to be applied to the upper surface of the tongue portion, if necessary to prevent any part or portion of the tongue from interfering with the spray discharged from the discharge nozzle at the distal end.

The central portion in one embodiment for universal usage is preferably about three inches in length to enable the distal end portion with the nozzle to reach the throat cavity and the dorsal portion of the tongue. This is for an adult. For a child, the length extent may be approximately one inch. For this purpose, the present invention proposes another embodiment having an adjustable central portion. In one preferred embodiment, a telescopic arrangement is used to provide for the length adjustment. This avoids the necessity of having different sized devices for different individuals.

It is important to appreciate that the tongue may prevent the dispensed product from reaching the rear of the mouth as set forth above. It is important for the product or material to reach down deep into the throat portion of the individual.

The present invention overcomes the problem of “Gag Reflex” which happens substantially automatically when any foreign object touches a sensitive area in the back of ones throat and the rear portion of the tongue.

To understand the purpose of the present invention in more detail, it is necessary to consider the problems in connection with bad breath.

Bad breath is caused by Anaerobic Sulfur Producing Bacteria which normally live WITHIN the surface of the tongue and in the throat. These bacteria are supposed to be there, because they assist humans in digestion by breaking down proteins found in specific foods, mucous or phlegm, blood, and in diseased or “broken-down” oral tissue. Under certain conditions, these bacteria start to break down proteins at a very high rate. Proteins are made up of Amino Acids. Two of the Amino Acids, Cysteine and Methionine, are dense with sulfur. It is these Amino Acids which are not desired and can cause problems.

When these “beneficial” bacteria come into contact with these compounds, the odorous and “bad-tasting” sulfur compounds are released from the back or dorsal portion of the tongue and throat, as Hydrogen Sulfide, Methyl Mercaptan, and other odorous and bad tasting compounds. These “problem” compounds are often referred to as Volatile Sulfur Compounds (VSC), where volatile means Vaporous and Effervescent, two adjectives which accurately describe their ability to offend other people instantly.

An understanding of Bacteriology will explain a very important fact about these “bugs.” These are not “bad guys” – they are not infectious. Everyone in the world has the same group of bacteria in their mouth. You cannot “catch” bad breath from someone else – even by kissing. Since they are part of our normal oral flora, you cannot permanently remove them from your mouth – not by tongue scraping, not by antibiotics, and not by rinses which claim to “lift the bacteria off your tongue”. The only scientifically proven and clinically effective method of halting Halitosis is by attacking the bacteria’s ability to produce VSC and by converting the VSC into non-odorous and non-tasting organic salts.

I have found that with present sprays and tongue scrapers the dorsal portion of the tongue and the throat cavity still harbor these bad “bugs”, and I have tried to solve the problem to eliminate the development of the VSC.

The anaerobic bacteria not only live on the tongue and in particular at the dorsal portion of the tongue, but are located in the rear portion of the mouth cavity. Use of a conventional spray head does not reach the rear of the mouth cavity, and therefore the entire effectiveness of the oral spray only reaches part of the intended area within the mouth cavity. Moreover, with a conventional spray head, the tongue tends to block the spray and prevent it from reaching the rear of the mouth cavity.

It is therefore the purpose of this invention to provide an oral spray mechanism which can reach the throat cavity for dispensing a material such as a fluid, a liquid in a mass or a gel of droplets or a gel paste or any material which may be discharged, as discharged from a pressurized container having an exit orifice.

Yet a further important purpose of my invention is to stop bad breath due to activity at the tonsil area, throat portion and rear portion of the tongue so as to neutralize the sulphur compounds that were created by the anaerobic bacteria that live in the deep recesses of the throat, tongue and tonsil area.

It is a further purpose of this invention to provide a combined tongue depressor and oral spray to permit the contents of a pressurized or non-pressurized container to have the fluid or gel contents thereof to be discharged as the oral spray in order to reach the rear of the mouth cavity without having the tongue interfere with the oral spray.

### Brief Description of the Drawings

In order that the invention may be more fully understood, and to have its purposes and advantages become readily apparent, reference is made to the following detailed description of the preferred embodiments illustrated in the accompanying drawings.

Fig. 1 is a front elevational view of one embodiment the combined tongue depressor and oral spray mechanism shown attached to a container adapted to contain a spray liquid with the mechanism shown in full outline in one position and in dashed outline displaced 180° from the full outline position;

Fig. 2 is a top view of the combined tongue depressor and oral spray mechanism of Fig. 1, and showing the fluid or liquid content container, closure cap and the tongue depressor and oral spray mechanism in the one full outline situation looking down to the container shown in Fig. 1;

Fig. 3 is a front view partially in section of the fluid or liquid exit discharge nozzle as shown in Fig. 1 and the connection to the container containing the fluid or liquid contained in the container to be dispensed by the combined tongue depressor and oral spray mechanism illustrating the exit orifice;

Fig. 4 is a partial schematic view facing the front of the nozzle shown looking in the direction of line 4-4 of Fig. 3 of the fluid or liquid exit from the nozzle portion of the combined tongue depressor and oral discharge;

Fig. 5 is a schematic view of a portion human face with the mouth portion shown in phantom and the combined tongue depressor and spray nozzle in the mouth cavity;

Fig. 6 is a modification of longitudinal tube 30 as shown in Fig. 1 in its collapsed or non-extended condition;

Fig. 7 is another view of the modified longitudinal tube shown in Fig. 6 in its extended condition;

Fig. 8 is a partial elevational view of a modification of the dispensing spray nozzle 40 as shown in Fig. 1 and provided with an oval exit portion configuration and a plurality of exit orifices;

Fig. 9 is a side view of the modification shown in Fig. 8;

Fig. 10 is a bottom view of the exit portion of the outer oval shaped member attached to the longitudinal tube shown in Fig. 8;

Fig. 11 is a partial elevational side view of a modification of the longitudinal tube of Fig. 8;

Fig. 12 is a side view of the longitudinal tube of Fig. 11;

Fig. 13 is a bottom view of the embodiment of Fig. 11;

Fig. 14 is a schematic side view of a modification of the combined tongue depressor and oral spray mechanism shown in Fig. 1 and provided with an exit portion connected to the longitudinal tube to provide universal movement in all directions and illustrating the longitudinal tube in three different positions, one of which is in full outline, and the other three in dashed outline to show movement to various different positions;



Fig. 15 is a top view of the modification shown in Fig. 14 and illustrating the different positions of the extension tube for movement into different positions showing the extension tube in different positions about a vertical or central axis of the container;

Fig. 16 is a front view of the modification shown in Fig. 14 and illustrating the extension tube displaced from the longitudinal axis of the fluid container;

Fig. 17 is a partial elevational view shown partially in section to illustrate in detail the structure for the material dispensing arrangement between the container and the tongue depressor portion so that the dispenser can be moved in all directions;

Fig. 18 is a sectional view taken along line 18-18 of Fig. 17;

Fig. 19 is a partial sectional view similar to Fig. 17 but showing the tongue depressor portion moved from the position shown in Fig. 17;

Fig. 20 is a partial sectional view taken along 20-20 of Fig. 17; and

Fig. 21 is another partial sectional view taken along line 21-21 of Fig. 17.

#### Detailed Description of the Preferred Embodiment

Referring now more particularly to the accompanying drawings and in particular to Fig. 1 which shows one embodiment of one of the best modes presently contemplated for carrying out the invention, the combined tongue depressor and spray device 10 is shown attached to or associated with a fluid container 12 for containing the liquid or fluid to be dispensed and sprayed through device 10.

As best seen in Fig. 1, the combined tongue depressor and oral spray device, device 10, is connected with container 12 which is adapted to contain the liquid or fluid to be sprayed. Closure member 14 closes inner extension portion 16 of container 12 which is an entry portion extension from container 12 and entry-exit portion for the material contained within the container. Closure member extension portion 18 forms part of the fluid dispensing mechanism and is coupled with closure device 14 and is a guideway for pressure member 20 connected with longitudinal tube 30.

Referring now more particularly to Fig. 3 which shows extension portion 18 and pressure member 20, extension portion 18 provides a guideway for pressure member to move both in a vertical direction relative to a central axis 22 which coincides with a central axis of container 12, and also permits and confines rotation of pressure member about the central axis 22. Pressure member 20 is rotatable relative to extension portion 18 and is movable axially along axis 22 relative to extension portion 18.

Extension portion 18 has an outer extending portion 24 which is in contact with the outside surface of pressure member 20 and pressure member 20 has an outwardly extension portion 26 which cooperate with each other for guiding and preventing the pressure member from becoming disconnected from extension portion 18.

The outwardly extension portion 26 which cooperates with outer extending portion 24 prevents pressure member 20 from becoming dislodged from closure member extension portion 18.

Outwardly extension portion 26 and outwardly extending portion 24 cooperate to guide the movement of pressure member 20 relative to closure member extension portion 18 both rotationally about axis 22 and longitudinally along axis 22.

Closure member 20 includes a central tubular member 28 which communicates with longitudinal tube 30 and container 12 so that pressure created by pumping action of pressure member 20 causes the contents of container to enter into central opening 32 of longitudinal tube 30.

Extension portion 18 is connected with member 14 to permit movement of pressure member 20 relative to extension portion 18. Pressure member 20 is rotatable relative to extension portion 18 and is movable axially related to the longitudinal axis of container 12 during both the pumping action and non-pumping action of pressure member 20. Extension portion 18 of the dispensing mechanism is connected with closure 14 and permits rotation of pressure member 20 through an arc of 360° about the longitudinal axis of container 12. Pressure member 20 is coupled with extension portion 18 and is used to cause the contents in the in container to be expelled by vertically pushing pressure member 20 relative to closure member 14 and extension portion 18.

Tongue depressor and oral spray device 10 is swively connected to pressure member 20 and is rotatable through an arc of 360° about an axis perpendicular to longitudinal axis 22 of pressure member 20. The spray device 10 may also be considered to be swively connected with pressure member 20.

The combined movements of the tongue depressor and oral spray device 10 and pressure member 20 relative to container 12 which is hand-held permits sufficient

movement of device 10 relative to container 12 so that the rear portion of the mouth can be sprayed with ease.

As best seen in Fig. 3 which schematically shows the plunger mechanism which includes pressure member 20 and is shown partially in section and includes an inner rim member defined by outwardly extending portion 26. Pressure member 20 cooperates with closure member extension portion 18 which is provided with outer extending portion 24 facing towards the central axis 22. Portion 26 is pressure fitted within the inner portion of outwardly extension portion 26 and is held by frictional engagement with inner rim member 50 of closure member extension portion 18, and outwardly extending portion 24 is in engagement with outer surface 52 of pressure member 20.

Pressure member 20 includes a roof portion 48 having internally thereof an L-shaped fluid guide member 34 extending therefrom which directs the material from central tubular member 28 to longitudinal tube 30. Fluid guide member 34 surrounds central tubular member 28 and has an opening or orifice 54 forming an outer tubular exit member from fluid guide member 34. Exit member or exit portion 56 of closure member 18 opens into central tubular member 28. Movement of pressure member vertically and axially about the central axis 22 of container 12 causes material to be expelled from the container 12.

Pressure member 20 as schematically shown is provided with an exit opening or orifice member 58 for communication with opening 54 of tubular member 28. Fluid guide member 34 is an L-shaped which has one leg 34a provided with an opening 62 surrounding orifice member 58 so that the material from container 12 and passing

through central tubular member 28 can be expelled through the orifice 58 into longitudinal tube 30. Tubular member 28 is surrounded by the other leg 34b of L-shaped fluid guide member 34

L-shaped fluid guide shaped member 34 has its opening 58 opening into central opening 32 of longitudinal tube 30. Central opening 32 has one end opening into and communicating with exit orifice member 58.

Tongue depressor and oral spray device 10 generally includes an L-shaped rotatable coupling member 36 at one end of tube 30 which is swively connected with pressure member 20 so as to permit longitudinal tube 30 to be universally movable relative to pressure member 20 and container 12, and for this purpose longitudinal tube 30 is shown in one position in solid outline and in a position displaced 180° in dashed outline, but it should be noted that it can assume any number of conventional positions for its intended use as best seen in Figs. 44 to 21.

Longitudinal tube 30 can have various cross-sectional configurations, and as noted in the first embodiment, as illustrated in Figs. 1 to 5, has a circular outer configuration when a transverse section is taken perpendicularly to the longitudinal axis thereof, and as shown in Figs. 11 to 13. In a similar manner, the outer configuration can have a square or rectangular or oval configuration when a transverse section is taken orthogonally to the longitudinal or central axis 44 of tube 30, an example of which is shown in Figs. 8 to 10.

L-shaped member 36 as shown partially in section includes an extension portion 62 which is on the inside of pressure member 20 and adjacent to the outer rim portion of

exit opening 58, so that it is rotatably connected with pressure member 20 of orifice member 56, and as seen in more detail in Figs. 17 to 21, which shows a modification to provide L-shaped member 36 at one end thereof includes an undercut portion 64 which forms a rotatable and connection with the edge of orifice member of pressure member 20 for a universal movement of longitudinal tube 30B so that tube 30 can be rotated through an angle of 360° relative to container 14. The inner portion of extension 62 includes an opening which communicates with opening 32.

Coupled to the other end of tube 30 is a dispenser spray nozzle 40 as best seen in Figs. 3 and 4. Dispenser nozzle 40 is provided with openings 42 peripherally arranged about the central axis 44 coaxial with central opening 32.

Spray nozzle 40 may also be provided with a central opening 46 aligned with opening 32 for the discharge of the material from container 12.

As best shown in Fig. 1, the nozzle 40 may be provided with a cover 40A which is shown proximate to nozzle 40 and provides a cover therefore.

Referring now more particularly to Fig. 5 which schematically shows the face of a human in phantom with the mouth orifice open and one embodiment of the combined tongue depressor and spray device positioned inside the mouth M with the combined spray device and tongue depressor above the tongue to prevent the tongue from moving into the way of the spray nozzle.

The tongue depressor positions itself in such a manner to prevent the tongue from moving into engagement with the upper pallet of the mouth so as to prevent the spray or

fluid or material as it exits from the dispensing nozzle 40 from reaching the throat and discharging fluid or material or spray towards the throat portion and the rear portion of the tongue. By preventing the material from reaching the throat portion, the intended use of the oral spray which has to reach the throat portion is destroyed.

The tongue depressor central portion 30 has its proximal end attached to the L-shaped rotatable connector 36 for coupling with the pressure member 20.

The tongue depressor as shown in the first embodiment while having a circular configuration has a sufficient diametrical extent to depress the tongue.

Reference is made to Figs. 6 and 7 which show a modification of the tongue depressor and oral spray 30 of Fig. 1 and designated 30A, and in which like parts have the same reference numeral throughout and the modified parts have a different or related reference numeral.

In Figs. 6 and 7, tubular portion 30A is shown as comprising a telescopic arrangement 66 comprising L-shaped member 36A forming an outer telescopic member and the inner tube forms an inner telescopic member 30A. A telescopic arrangement is provided as another embodiment because the mouth portions of an individual can vary, and it is important to reach the rear throat area of the individual user. In particular, when use is intended for a youngster, the length of tubular member 30A is desirably smaller than a connective size for an adult and the possibility to reduce the longitudinal length is desirable. Double headed arrow 82 shows axial movement of longitudinal tube 30A relative \_\_\_\_\_.

Fig. 6 shows the retracted position and Fig. 7 shows the extended position of the telescopic arrangement.

Referring now to Figs. 8 to 10 which show a front view, a side view and a bottom view of a modification of dispensing nozzle 40 and is designated 40A and which shows the nozzle 40A with an oval transverse cross-section having a flat bottom or underside portion 80 which is adapted to rest on top of the tongue and provided with openings 42A. Longitudinal tube 30A which also is provided with a flat portion, so as to have it rest on top of the tongue. While in this view reference is made to longitudinal tube 30A, longitudinal tube, 30 in a non-telescopic arrangement can also be used.

Referring now more particularly to Figs 11 to 13, which shows a front view of dispenser or spray nozzle 40B having a dispensing opening 42B. In this embodiment, the cross-section of tubular member 40B is substantially circular.

Referring now more particularly to Figs. 14 to 16 and to Figs. 17 to 21 which show a detail of Figs. 14 to 16. Tubular member 30B is coupled with pressure member 20 by means of universal coupler 84 and includes a substantially cylindrical member 86 forming part of universal coupler 84 and connected with tubular member 30C.

Referring now more particularly to Figs. 17 to 21 which shows the details of the connection of the L-shaped fluid guide member 34. In this embodiment, L-shaped member 34 is angularly arranged with respect to pressure member 20 so that all different possible angular movement of L-shaped member 34 relative to pressure member 20 is made possible.



Pressure member 2 is provided with a substantially cylindrical housing 74 for receiving a cylindrical member 20. In Fig. 17, L-shaped guide member 34 is shown in a center position and is movable in either direction as shown by arrows 78A, 78B, and in Fig. 19, arrow 79C shows the movement in both directions. Tube 34 is rotatable in

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The tongue depressor as shown can have a rectangular cross-sectional configuration or a square cross-sectional configuration having a flat portion similar to flat portion 80 which is adapted to rest on top of the tongue if necessary.

The device is made from a readily available synthetic material which has no deleterious effect on the mouth cavity.

The combined tongue depressor spray nozzle is utilized together with the container by a user who holds the container in their hand and places the tongue depressor spray nozzle into the mouth cavity with the nozzle towards the rear of the mouth and back of the tongue. It is well known that bacteria embeds itself on the tongue and that the rear or dorsal portion of the tongue is difficult to reach.

Closure member 14 is provided with an outer surface having a gripping surface so that the closure 14 can be easily opened and removed from container 12.

The entire tongue depressor and oral spray device is quite compact for ease of carrying with the container, as well as ease of use. The central portion 12 is typically and preferably about 3 inches long so that the rear portion of the throat and the dorsal portion of the tongue can be reached.

The universal coupler 84 comprises a canter levered pulley 86 in the form of a circular lug connected to the vertical wall 20A of the pressure member 20 in a manner that pulley 86 can only be rotated about axis X-X, designated 86. Cylindrical member 88 is a hollow ball provided with a projection 90 directed to and approximately at the center of the ball or cylindrical member 88.

Projection 90 is provided with two material flow paths 90A and 90B which merge into a single flow path 90C at the right end. At the right end, as viewed in the drawing, both paths which merge communicate with L-shaped fluid or material guide member 34.

At the left end, both paths merge into a single flow path 90D as viewed in the drawing in Fig. 18. At the left end, path 90D is connected with central opening 32.

As shown, circular lug 86 is rotatable about axis X-X in wall 20A and

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It will be readily appreciated that the tongue depressor and oral spray provides a unique mechanism in order to reach all portions of the tongue as well as the throat cavity. For this purpose, it is preferred that device 10 have a length of approximately one inch to three inches so that the rear portion of the tongue, throat portion and tonsil area can be reached. The smaller extent is desired for a child where the length from the front of the mouth to the throat area is of a lesser extent.

It is to be understood that the detailed descriptions of the various embodiment of the inventions are provided merely by way of example, and it will be further appreciated

that various changes and modifications may be made without departing from the scope of the invention.